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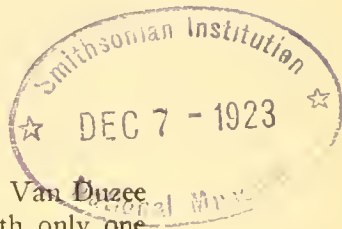
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XXV
EXPEDITION OF THE CALIFORNIA ACADEMY
OF SCIENCES TO THE GULF OF
CALIFORNIA IN 1921¹

DIPTERA FROM THE ISLANDS AND ADJACENT
SHORES OF THE GULF OF CALIFORNIA

II. General Report

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The first paper on the Diptera collected by Mr. Van Duzee in the region of the Gulf of California dealt with only one family, the Bombyliidæ; the species in this family were unusually abundant and a large percentage were new to science. But some of the other families of Diptera were well represented, especially the typical summer forms.

The material studied would tend to show that the insect fauna of this region is largely Sonoran and many species may be found ranging throughout the southwestern United States. Species taken on the mainland near Guaymas or on adjacent islands may have their center of distribution in tropical Mexico. The common house-fly is present throughout the region and there are some species represented which are wide-

¹A map showing all the islands, etc., visited by this Expedition will be found in Vol. XII, No. 6, of these Proceedings, copies of which can be supplied at nominal cost.

November 6, 1923.

spread in their distribution, such as: *Lipochæta slossonæ*, *Zodion fulvifrons*, *Chrysomya demandata*, *Erax barbatus*, *Baccha clavata*, *Volucella esuriens*, and *Chrysomyia macellaria*.

The writer is indebted to Mr. C. W. Johnson for comparing certain specimens with determined material and for the donation of some named species which aided in naming related new forms. The Dolichopodidæ, Anthomyidæ, most of the Tachinidæ, and Ephyridæ and a few miscellaneous specimens remain to be reported upon. In a recent paper (ante pages 105-112) Mr. M. C. Van Duzee has described seven new species of Dolichopodidæ collected by the expedition, and Mr. J. R. Malloch has published (ante pages 425-428) a partial report on the Anthomyidæ and Lonchæidæ of the expedition.

CHIRONOMIDÆ

1. *Culiciodes* sp.

Several specimens were taken on San Esteban Island, April 20. As might be expected they were labelled "pests."

TABANIDÆ

2. *Apatolestes comastes* Williston

This common southwestern species was taken at Loreto, May 20.

3. *Tabanus punctifer* Osten Sacken

San José Island, June 10; Salinas Bay, Carmen Island, June 16.

4. *Tabanus rubescens* Bellardi

A series taken at Gonzales Bay, April 28. The writer was unable to place this species with certainty and specimens were sent to Mr. C. W. Johnson for determination.

STRATIOMYIDÆ

5. *Nemotelus wheeleri* Melander

Angeles Bay, June 26; Mulegé, May 15.

6. *Nemotelus canadensis* Loew

Two females taken on San José Island, June 10, probably belong to this species, although black in color instead of sub-aescent and without the usual yellow line around the abdomen.

7. *Nemotelus rufoabdominalis* Cole, new species

Female: Length 5 mm. Head black, with short, appressed, silvery, tomentum-like pile. Face long and pointed, much as in *trinotatus*. Antennae black, apices of first two joints red, compound third joint longer than the first two combined, the slender arista about as long (see fig. 1). Top of rostellum white and a white spot in front of each eye. Head rather flat and frons sloping. Proboscis black, bent slightly beyond the middle.

Thorax and scutellum shining black, with dense, appressed, silvery pile; pleura shining black, largely clothed with pile as on mesonotum. Humeri and lateral line white, widening at wing base. Halteres brownish at base, with pure white knob. Squamæ and its pile white.

Dorsum of abdomen largely orange in color, with a narrow rim of white; fifth tergite largely black; a white triangle on posterior margin of second and third tergites and a wider white spot on posterior margin of fourth. Venter colored much as on dorsum, but blackish brown around the outer margin. The minute white pile of the abdomen white. Two front pairs of legs missing. Hind coxæ and most of hind femora black, the apical third of femora yellowish; tibiae with base and apex yellowish, the main part black; tarsi whitish. Wings whitish hyaline, the veins very pale; vein R_{2+3} furcate.

Type: Female, No. 1335, Mus. Calif. Academy of Sciences, collected by E. P. Van Duzee, April 25, 1921, at Tepoca Bay, Sonora.

The species runs to *trinotatus* in Melander's table of species (*Psyche*, X, p. 174, 1903), but differs in the orange red color of abdomen, in the outline of the frons and in the markings. The three other species having white triangles on the abdomen and the vein R_{2+3} furcate (*acutirostris* Loew, *wheeleri* Melander and *bellula* Melander) all have the abdomen black.

THEREVIDÆ

8. *Pherocera nigripes* Cole, new species

Female: Length 6 mm. Nearly allied to *albihalteralis* Cole. Head and appendages black. Face gray pollinose. Vertex, cheeks and occiput gray pollinose. Frons with shining black diamond-shaped spot taking up most of the space, the rest of the frons gray pollinose (see fig. 2).

Antennæ as in *P. signatifrons* Cole, first joint with black bristles and white pile. Palpi and cheeks with long white pile.

Thorax black, gray pollinose, with a brownish median vitta which is bisected by a fine white line; a dark long oval spot on either side of the median vitta. Pleura and coxæ gray pollinose. Scutellum gray pollinose, with sparse white pile. Stem of halteres yellowish brown, the knob whitish.

Abdomen black, basal half thinly gray pollinose, apical half shining. White pile on the basal four tergites, shorter black pile on the rest of the segments. Incisures of first, second, third, and fourth segments white, broadly on the second. Venter blackish, thinly gray pollinose. Genitalia typical of the genus, with no terminal circlet of spines. Legs black; basal half of anterior tibiæ white on front side and with white pile longer than the diameter of the tibiæ. Wings hyaline, the stigma pale brown. Venation as in *P. signatifrons*.

Type: Male, No. 1336, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 17, 1921, on **San Pedro Nolasco Island**.

This species differs from *signatifrons* in lacking the velvet black spots at base of antennæ, from *flavipes* in having black legs and from *albihalteralis* in the differently marked frons and the gray pollinose vertex. The venation varies little in the genus.

9. *Chromolepida mexicana* Cole, new species

Female: Length 7 mm. Nearly allied to *C. bella* Cole, probably averaging a little larger. First antennal joint about twice the length of the third, base yellowish brown. Face and frons almost the same as in *C. bella*. Upper occiput with white scales, the sides with greenish iridescent scales. Cheeks narrowly black, with short black pile. Occiput and palpi white pilose.

Thorax black, the mesonotum dulled by thin grayish brown pollen; disc with whitish scales except a double median vitta, sides with greenish scales. Pleura black, thinly gray pollinose. Mesopleura and upper sternopleura with dense, green iridescent scales, a few similar scales on the outer side of the coxæ. Hypopleura with a tuft of white pile. Knobs of halteres black, the stems paler. Scutellum black, with four black bristles and short whitish scales on the margin.

Abdomen shining black, faintly gray pollinose on first tergite. Narrow white incisures on second and third segments. Pile beyond the fourth segment short, black. Coxæ and trochanters black; femora, bases of front tibiæ, all other tibiæ except apices yellow. Most of front tibiæ, all of front tarsi, last three joints of other tarsi blackish brown. Wings whitish hyaline. Stigma and costal region of wing brown; cross-veins clouded brownish and portion of wing just back from margin gray, broader at the apex of the wing, very narrow along the posterior margin. Venation as in *C. bella*.

Type: Female, No. 1337, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 10, 1921, at **Guaymas, Sonora**.

This species differs from *bella* Cole in having black halteres, a differently marked thorax and scutellum and an entirely black abdomen.

10. *Psilocephala platancala* Loew

Guaymas, April 11.

11. *Psilocephala signatipennis* Cole

A variety of this species was taken at Mulegé, May 15.

12. *Psilocephala lateralis* Adams

Loreto, May 20, two males.

13. *Psilocephala tepocæ* Cole, new species

Female: Length 7.5 mm. Nearly related to *P. cinerea* Cole. Head, antennæ and mouth parts black. Frons with two round black spots next the eye margin a little above the level of the antennæ; above these spots the frons is gray pollinose, the lower frons and face white pollinose. Cheeks and occiput white pollinose and white pilose. Palpi with white pile. First joint of antenna shorter than third (see fig. 3), gray pollinose, with black bristles, the rest of the antenna black.

Thorax gray, light gray pollinose, a very broad brownish median stripe, a like-colored long oval spot on either side of this. Mesonotum mixed whitish and black pilose. Scutellum gray, whitish pilose, with four strong, black marginal bristles. Pleura and coxæ silvery gray pollinose and white pilose. Base of stem of halteres and base of knob brown, the rest pale yellowish.

Abdomen black, gray pollinose, the first four segments white pilose, the other segments with short, erect, yellow pile. Base of fifth and sixth segments semishining. Circlet of spines on genitalia yellowish. Most of tibiæ and two basal joints of tarsi yellow; femora, apices of tibiæ and first three tarsal joints and all of last two tarsal joints black. Wings gray hyaline, stigma dark brown; veins faintly and narrowly bordered gray.

Type: Female, No. 1338, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 25, 1921, at **Tepoca Bay, Sonora**.

There is one female paratype taken at the same time and place. The species does not have the legs and halteres black as in *baccata*, to which species it is related. It differs from *cinerea* Cole in having yellow pile on the posterior part of the

abdomen and in having cell M_3 widely open in the margin. The antennæ are proportionately broader and shorter than in *cinerea*.

14. *Thereva semitaria* Coquillett

San Francisquito Bay, May 10; Tepoca Bay, April 25.

SCENOPINIDÆ

15. *Scenopinus nubilipes* Say

A male and female, taken at Mejia Island, April 30.

16. *Pseudatrichia insulana* Cole, new species

Male: Length 2.75 mm. Eyes holoptic; frontal triangle small, yellow. Face, cheeks and outer portion of occiput yellow. Ocellar tubercle brown. First joint of antennæ brown (the rest broken off in specimen).

Mesonotum black, gray pollinose, the humeri and lateral stripe yellow; some yellow on prescutellar callosities. Disc of scutellum black, gray pollinose, the broad margin yellow. Viewed from above there are three grayish brown thoracic vittæ, a narrow median one and two wider ones; outside the wider stripes there are dark spots just above the lateral line. Pleura largely black, gray pollinose, but with some yellow marks, as on the propleura, upper sternopleura and wing base. Stem of halteres brown, the knob white.

Abdomen shining black, with white lateral margins on tergites and broad posterior margins on second, third, fourth, fifth and sixth tergites. Pile of abdomen sparse and white. Hypopygium large, about one-fourth as long as rest of abdomen, brown at base, the outer part of styles whitish (see fig. 4). Femora, apical portion of tibiæ and the tarsi blackish brown; knees yellow; basal portion of front two pair of tibiæ brown, hind pair largely yellowish. Wings whitish hyaline; first section of radius about as long as the second, the second about equal to the fourth.

Female: Length 5.8 mm. Differs from the male mainly in darker color of head and much longer abdomen. First antennal joint buried in head, second joint brown, third joint about twice as long as second (see fig. 5), brown, yellowish at base. Frons almost as broad as eye, dull yellowish brown. Occiput, face and mouthparts colored as is frons. Wings reaching to middle of fifth abdominal segment. First four abdominal segments black and marked as in male, the segments beyond reddish brown, the incisures paler but not white.

Type: Male, No. 1339, and *allotype*, female, No. 1340, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 21, 1921, on Isla Raza, Gulf of California.

Pseudatrichia unicolor Coquillett, *pilosa* Coquillett and *flaviceps* Coquillett have the scutellum entirely black; *P.*

longurio Loew and *griscola* Coquillett have the scutellum partly yellow, but the former has the head and abdomen black and the latter is generally yellowish or brown in coloration.

ASILIDÆ

17. *Leptogaster* sp.

A single male about 11 mm. in length was taken by Mr. Van Duzee at San Francisquito Bay, May 10. The specimen is somewhat greased. The empodia are present and the anterior intercalary vein forms a distinct angle with the portion of the posterior cross-vein that closes behind the second posterior cell. The color of the body is evidently blackish brown, with reddish pleura, humeri, and yellowish cross bands on abdomen. Hind femora largely black, with short silvery pile below on swollen part much as in *hirtipes*. The antennæ are blackish brown.

18. *Stenopogon mexicanus* Cole, new species

Male: Length 23 mm. A brown and flesh-colored species, densely covered with gray and yellow pollen. Apex of first antennal joint and all of second joint red, the rest of antennæ black; third joint rather slender oval, scarcely as long as the first and second combined, the style slender and almost as long as the third joint. Pollen on face white, on cheeks and oral margin yellowish brown. Mystax, oral bristles, pile of palpi and beard white. Bristles and pollen of vertex yellowish. Proboscis and palpi black.

Ground color of thorax flesh-colored, the bristles and pile white or pale yellow. Mesonotum with median bisected dark brown stripe, the dividing line of golden pollen; an indistinct shorter stripe on either side. A group of bristles in front of scutellum; prescutellar callosities with white bristles. Pleura and coxæ largely silvery pollinose. Hypopleura with strong tuft of white bristles and hairs, the mesopleura with white pile. Knob of halteres reddish, the stem yellow. Scutellum golden yellow pollinose, with erect white pile and bristles.

Abdomen rather long and slender, ground color as on thorax, largely obscured by yellowish gray pollen. A rather narrow median blackish brown stripe on the first six tergites; on each side of the tergites near the base is a spot which in certain lights is brown. Genitalia flesh-colored, the cerci brown; styles rounded and reaching beyond hypandrium (see fig. 6). Legs reddish yellow, the inside and front of femora black; front of tibiæ with some black, especially the hind pair. Legs dense white pilose, the bristles white. Wings yellowish hyaline, veins black, the costa with a white fringe, quite noticeable at the base. Cell R_5 wide open, M_3 (fourth posterior) closed.

Female: Length 20 mm. Very nearly like the male; abdomen more slender, the median stripe more distinct and continued on the seventh segment. Eighth segment and ovipositor shining black.

Type: Male, No. 1341, and *allotype*, female, No. 1342, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 10, 1921, at **Guaymas, Sonora**.

On account of the pile on the hypopleura and the shape of the third antennal joint and style this species would run to the last couplet in Back's table of species (Trans. Amer. Ent. Soc., 1909, XXXV, 192), but differs from *helvolus* Loew and *picticornis* Loew in color and markings and in having cell M_1 (first posterior) open in margin.

19. *Saropogon coquilletti* Hine

Patos Island, April 23.

20. *Saropogon semiustus* Coquillett

Tepoca Bay, April 25.

21. *Lissoteles vanduzeei* Cole, new species

Male: Length 6-7 mm. A small black species, densely covered with silvery gray pollen. Antennæ black, thinly gray pollinose, first, second, and third joints about equal in length, the slender black style almost as long as these three joints together (see fig. 7). All pile of head and the orbital bristles white, the pile on the frons sparse. Face gently convex, with a dense shining white mystax that reaches in a narrowing triangle to the base of the antennæ. Palpi and proboscis black.

Median portion of mesonotum less thickly pollinose, semishining. All pile and bristles of thorax and scutellum white. Pile of mesonotum quite numerous. Scutellum thickly covered with erect white pile. Squamæ whitish. Halteres brown at base, with a yellow stem and knob.

Abdomen black, the posterior half of tergites 2-8 more thinly pollinose than the rest of the dorsum and semishining grayish black. Abdomen quite thickly white pilose, the pile longer at base and becoming very short on hypopygium, which is dense gray pollinose. Epandrium slit about half way to base in middle (see fig. 8). A patch of long white bristles on the posterior angles of the first tergite. Venter gray pollinose and quite thickly white pilose. Legs black, the femora and tibiæ gray pollinose, all the pile and bristles white. Claws largely black, red at base, the pulvilli dull yellowish white. Bristles of front tibiæ and tarsi very long. Wings hyaline, the veins at base of wing yellow, the rest black. Venation as in species of *Neopogon*.

Female: Length 6-10 mm. Same as the male in most characters. Mesonotum with more pollen. Abdomen wider and more densely polli-

nose on dorsum, only posterior margins of segments semishining. Circlet of spines at tip of abdomen yellowish white and blunt. Pile of abdomen short, erect, white and quite dense, longer on the sides of first and second segments.

Type: Male, No. 1343, and *allotype*, female, No. 1344, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 7 and May 10, 1921, at **Angeles Bay** and San Francisquito Bay, Lower California.

There is a large series of paratypes in the collection of the California Academy of Sciences taken from May 7 to June 6 in the following localities other than those mentioned above: Ceralbo Island, Monserrate Island, Coronados Island, Loreto, and Agua Verde.

The genus *Lissoteles* was established by Bezzi (Boll. del Lab. di Zool. gen. e agr. etc., IV, p. 177) in 1910 for a new species, *L. hermanni*, taken at Panama. The genus *Neopogon* was created by Bezzi for the North American species formerly placed in *Stichopogon*, one of the distinguishing characters being the presence of only one supra-alar bristle. The genus *Lissoteles* is allied with *Neopogon* in this respect and in most other characters. The antennæ are quite different and in the above new species the style is comparatively much longer than in *hermanni*. The species is further distinguished by the dense white mystax reaching to the base of the antennæ, thus differing from all species of *Neopogon* and *Stichopogon*, as well as from the only other species of the genus *Lissoteles*.

22. *Proctacanthus arno* Townsend

Escondido Bay, June 14. A rather small male collected at La Paz, June 4, may prove to be a distinct species.

23. *Erax anomalus* Bellardi

San Pedro Bay, July 7; San Carlos Bay, July 8.

24. *Erax coquilletti* Hine

Patos Island, April 25.

25. **Erax latrunculus** Williston

Guaymas, April 10, 12.

26. **Erax unicolor** Bellardi

Guaymas, April 11.

27. **Erax barbatus** Fabricius

Mulegé, May 14; Escondido Bay, June 14; Agua Verde, May 26; Las Animas Bay, May 8; Loreto, May 20; La Paz, June 4.

28. **Erax productus** Hine

Three male specimens answer the description of this species. One was taken on Cerralbo Island, June 6, the others on Tortuga Island, May 11 and June 22. The type locality is Lakeside, Calif. The mesonotum is more or less compressed laterally and has short but quite noticeable black pile. There is a metallic glint to the mesonotum. A small female from Tiburon Island, July 4, may belong to this species.

29. **Erax** sp.

Two female specimens taken on San Francisco Island, May 30, probably belong to an undescribed species. They are in the *stramineus* group.

30. **Erax** sp.

One female taken on Tiburon Island, April 23, belongs to the *stramineus* group but cannot be definitely placed without males. It is near *coquilletti* Hine. A female from Isla Partida, May 3, is near this species.

31. **Erax** sp.

Two females taken at Guaymas, April 10 and 14 belong to the *stramineus* group, but cannot be determined without males.

32. *Asilus* sp.

Two females of a very large species taken at Las Animas Bay, May 8, would run to *astutus* Will. in Hine's table (Annals Ent. Soc. Amer., vol. II, 1909), but are 23 mm. in length and differ in certain other characters. The species is gray pollinose, without strong spines at the tip of the ovipositor. Femora and tibiae black. Wings hyaline, with a faint brownish yellow cloud in the middle.

33. *Mallophora guildiana* Williston

Pond Island Bay, June 30.

PIPUNCULIDÆ

34. *Pipunculus sonorensis* Cole, new species

Male: Length 3 mm. Frons narrow, extending slightly over half way to posterior eye margin, silvery pollinose. Eyes touching for a very short space, the ocellar triangle narrow and black. Face silvery pollinose, slightly narrowing toward oral margin. Antennae blackish brown, third joint long and acuminate, paler on apical half, with a black arista. Occiput black, sides thinly silvery pollinose.

Mesonotum and scutellum black, thinly gray dusted, oval in outline; humeri pale. Postnotum gray pollinose. Pleura black, gray pollinose. Part of stem of halteres brown, the knob yellowish white.

Abdomen black, thinly gray dusted, oval in outline; pile sparse, pale, a few larger hairs at base of first segment. Hypopygium as long as fifth segment, slender, asymmetrical, largely developed on right side.

Legs black, the apices of femora and narrow bases of tibiae yellow. Hind femora unarmed, the trochanters with a large, blunt, yellowish tooth (see fig. 9). Hind tibiae strong, the first tarsal joint slender. Wings hyaline, the stigma hyaline. Space between apex of subcostal vein and R_1 about half that between R_1 and R_{2+3} . Small cross vein about middle of cell 1st M_2 and beyond apex of R_1 . Last section of M_{1+2} (fourth vein) distinctly sinuate.

Type: Male, No. 1345, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 25, 1921, at **Tepoca Bay, Sonora.**

The species belongs to the *subvirescens* group and in Cresson's table of species would run to *unguiculatus*; but there are several differences, notably the difference in shape of the tooth on the posterior trochanters.

SYRPHIDÆ

35. *Volucella esuriens* Fabricius
Agua Verde, May 26; Las Animas Bay, May 8.
36. *Volucella isabellina* Williston
Loreto, May 20; Angeles Bay, May 4, 5, and June 25.
37. *Volucella isabellina* variety
Tiburon Island (Bay at south end), July 5.
38. *Volucella megacephala* Loew
Angeles Bay, May 7.
39. *Copestylum estebana* Townsend
San Francisquito Bay, May 10 and June 23.
40. *Copestylum limbipennis* Williston
Angeles Bay, June 25, 26.
41. *Nausigaster unimaculata* Townsend
Angeles Bay; San Evaristo Ranch, June 10; San José Island, May 28, 29; Guadalupe Pt., Concepcion Bay, June 17; San Esteban Island, April 19.
42. *Baccha clavata* Fabricius
Guaymas, April 13, 15; San Lorenzo Island, June 25; San Francisquito Bay, May 10; San Evaristo Ranch, June 10.
43. *Baccha lemur* Osten Sacken
Agua Verde, May 26.
44. *Mesogramma parvula* Loew
Mulegé, May 14, 15.

45. *Mesogramma marginata* Say

Mulegé, May 14.

46. *Allograpta obliqua* Say

San Evaristo Ranch, June 10; Espiritu Santo Island, June 9; Santa Catalina Island, June 12; Mulegé, May 14.

47. *Eupeodes volucris* Osten Sacken

Loreto, May 20.

CONOPIDÆ

48. *Conops sylvosus* Williston

La Paz, June 3, 5.

49. *Physocephala affinis* Williston

La Paz, June 3, 4; Angeles Bay, May 7.

50. *Zodion pygmæum* Williston

Loreto, May 20; Guaymas, April 10, 11; Mulegé, May 15.

51. *Zodion fulvifrons* Say

Las Animas Bay, May 8; La Paz, June 5. A series of six females taken, all very pale in general coloration but with dark legs.

52. *Zodion* sp.

Mulegé, May 15; La Paz, June 3; Guaymas, April 7. One specimen was taken in each locality, all being males. It is a dark colored species, with white thoracic vittæ and white spots on the abdomen. The species is probably undescribed.

TACHINIDÆ

53. *Myiophasia robusta* Coquillett

Mulegé, May 14. This and the following three species are only a small part of the Tachinidæ taken on the expedition. A number of species are apparently undescribed, and the family will be reported on in a later paper.

54. *Linnæmyia compta* Desvoidy

Las Animas Bay, May 8; Mulegé, May 14.

55. *Archytas analis* Fabricius

La Paz, June 3, 5.

56. *Archytas aterrima* Desvoidy

La Paz, June 3, 4; Guaymas, April 7.

MUSCIDÆ

57. *Musca domestica* Linnæus

The house-fly is probably distributed over most of the territory visited by the expedition. There are specimens in the collection from Guaymas, April 7, 15 and Santa Cruz Island, May 27.

58. *Chrysomyia macellaria* Fabricius

San Pedro Nolasco, April 17; Espiritu Santo Island, June 9; San José Island, May 29; Angeles Bay, May 5, 7 and June 15, 26; Pond Island Bay, July 1; Granite Island, May 2; Santa Cruz Island, May 27; Guaymas, April 7, 15; San Evaristo Ranch, June 10; Mulegé, May 14; Danzante Island, May 24; Coyote Bay, June 18.

PHYCOTROMIDÆ

59. *Cœlopa anomala* Cole, new species

Male: Length 6.25 mm. A rather pale colored species with strong bristles on abdomen and legs. Head reddish in ground color, paler across the middle of the frons, which is gently convex. The ocellar

triangle and most of occiput gray pollinose. Antennæ reddish brown, first joint scarcely visible, the second about as long as the third, with a long backwardly directed bristle on anterior margin and a shorter bristle directed forward, also several very short, black bristles; third antennal joint broadly rounded, the arista very slender and a little longer than antenna. Cheeks with rather short bristles and vibrissæ.

Thorax not as flat and wide as is usual for the genus, being almost as convex as in some Scatophagidæ, dark brown or gray in ground color, the mesonotum and scutellum densely gray pollinose, with rather short black bristles on most of the surface, a median row distinct and a row on either side as in other species of the genus. Scutellum with two pairs of long bristles, the apical pair close together at base and cruciate. Pleura gray pollinose, with some black pile and bristles. One long mesopleural bristle just in front of the wing base. Halteres yellowish, the knob slightly infuscated. A pair of long bristles on mesonotum just in front of scutellum.

Abdomen gray, with posterior portion of tergites 2-5 dull yellowish. Abdominal segments beyond fifth dark brown, the genitalia small and folded under, the genital styles yellow. Dorsum of abdomen with numerous long black bristles, mostly directed toward apex.

Legs shining yellowish brown, the pulvilli appearing white on account of the dense microscopic white pile. Femora with numerous black bristles and some black pile; bristles of front femora very long and slender; anterior surface of middle femora with a row of seven strong bristles on distal half, six of them rather short, heavy and blunt. Tibiæ with black bristles and pile, the middle tibiæ with a large blunt apical bristle and a similar one just above it. Tarsi with black pile, especially long and dense on the two hind pair. Wings grayish hyaline, tinged with yellow along the veins; costa subcosta and radial veins yellowish, the other veins brown. Stigma yellowish. Epaulet at base of wing with a rather long black bristle.

Female: Length 6 mm. Very nearly like the male. Bristles of the head shorter. Abdomen much broader than in male, black, thinly gray dusted, with rather short, thin black pile on dorsum. Legs much more slender than in male, lighter colored, with no heavy bristles on femora. Posterior tibiæ with one long, very slender preapical bristle on the dorsal surface.

Type: Male, No. 1345, and *allotype*, female, No. 1346, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 8, 1921, at **Las Animas Bay, Lower California**. *Paratype:* One female, taken at Puerto Refugio, Angel de la Guardia Island, May 1, 1921.

This species is placed in *Cœlopa* for the time being, but it possesses characters which might well exclude it from that genus. *C. frigida* Fall. has no mesopleural bristle and the mesonotum is much flattened and rectangular; it has no long pile on the middle tarsi of the male. *C. frigida* Fall. and

parvula Hal. do not have long bristles on the dorsum of the abdomen in the male. *C. parvula* has no heavy bristles on the femora and no mesopleural bristle.

SAPROMYZIDÆ

60. *Camptoprosopella verticalis* Loew

Guaymas, April 11; Mulegé, May 14.

TRYPETIDÆ

61. *Euaresta bellula* Snow

Guaymas, April 11; Puerto Refugio, May 1; San Lorenzo Island, May 9; Mulegé, May 15.

62. *Urellia mevarna* Walker

San Francisquito Bay, May 10; Mulegé, May 14; San Nicolas Bay, May 16; San Lorenzo Island, May 9; San Pedro Martir Island, April 18.

63. *Plagiotoma obliqua* Say

San Pedro Martir Island, April 18.

64. *Ædaspis minuta* Snow

Puerto Ballandra, May 22.

65. *Eurosta pallida* Cole, new species

Male: Length 3.5 mm. Frons, face, antennæ, palpi, proboscis, and occiput yellow. Bristles of frons brown. Oral opening large, the margin somewhat produced. Third antennal joint slightly concave above; arista yellow at base, blackish toward tip. Bristles back of vertex white.

Mesonotum brown, gray pollinose, the humeri and lateral margins yellow; the pile yellowish and bristles brown. Scutellum pale yellow, with four brown bristles. Much of pile on mesonotum bristle-like, a conspicuous clump on the humeri. Metanotum brown. Pleura yellowish; two strong mesopleural bristles, one pteropleural and one sternopleural. Halteres yellow.

Abdomen largely brown on dorsum, yellowish on most of first and all but two large spots on second; base of third tergite yellowish; Venter and genitalia yellowish.

Legs wholly yellow, the tips of claws black. Wings almost as broad and rounded as in some species of *Eutreta*, gray (probably teneral), with base, apex, and many spots whitish hyaline (see fig. 10). Some of the wing spots are quite large; veins mostly pale; first vein bristly along whole length, third with a few bristles at base.

Type: Male, No. 1347, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 10, 1921, at San Francisquito Bay, Lower California.

The type is the only specimen collected. The species is doubtfully placed in this genus, the frons not being much wider than long. The wing markings suggest *E. soladaginis* Fitch, but the base of the wing is more hyaline. In *E. reticulata* Snow, *fenestrata* Snow and *conspurcata* Doane there are fewer hyaline spots in the wings.

66. *Baryplegma maculipennis* Cole, new species

Female: Length 4 mm. Frons, occiput and mouth parts pale yellow, the antennæ darker; face whitish yellow. Bristles of frons and vertex brown, other bristles and pile of head whitish yellow. Third antennal joint about as long as basal joint, rounded at tip; arista yellowish at base, the larger portion brown.

Central portion of mesonotum black in ground color, yellowish red on the margins, largely golden pollinose and with dense, appressed, bristle-like pile of yellowish color. Scutellum pale yellow, with short pile as on mesonotum and four long brown bristles. Upper pleura yellowish red, the rest black in ground color, gray pollinose. Postnotum black, gray pollinose. Halteres dark yellow.

Abdomen clear reddish in color (more or less crushed in type specimen), with pale bristles; ovipositor reddish. Legs bright yellow, with yellow pile and bristles; a row of five strong bristles below on front femora. Wings with yellow, gray, and black markings and numerous hyaline spots (see fig. 11); nearly all of the hyaline spots are bordered with dark gray or blackish brown. Small cross-vein distinctly beyond middle of cell 1st M_2 . Vein R_4+5 bristly nearly whole length, nearly parallel with M_{1+2} , both slightly arcuate.

Type: Female, No. 1348, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, June 6, 1921, on Ceralbo Island, Gulf of California.

Only one specimen was taken. The species might be placed in the genus *Tephritis*, but it is certainly allied to *Baryplegma gilva* v.d.W. from Mexico, the only other species in the genus. The new species has much less yellow on the wings, the posterior portion and tip having gray markings with no

yellow; some markings on the anterior margin are almost black. The general arrangement of the hyaline spots suggests *gilva*.

ORTALIDIDÆ

67. *Notogramma purpurata* new species

Male: Length 4.5 mm. Differs from *N. stigma* in color and markings. Antennæ light brown, darker on the very small first joint. Most of frons shining purplish red, the ocellar triangle and lateral stripes metallic green. Face and clypeus dark metallic green, the cheeks reddish brown. Occiput metallic greenish black.

Mesonotum marked with black stripes which are composed of black dots with a microscopic hair on each; color between stripes greenish and coppery. Pleura dark metallic green, with some white pollen on propleura. Scutellum metallic coppery green.

Base and central portion of dorsum of abdomen dark metallic green, the wide margin bright purple. Hypopygium green. Apical third of femora and most of tibiæ reddish; first two joints of posterior and middle tarsi, basal part of third and all except apex of front metatarsi yellow, the rest of tarsal joints black. Wings a little more pointed than in *stigma* (see fig. 12).

Female: Practically the same as the male.

Type: Male, No. 1349, and *allotype*, female, No. 1350, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 25, 1921, on **Monserate Island, Gulf of California**. *Paratypes*: Four males taken in type locality, three taken with types and one taken on May 29.

This is the second species described from North America. The type locality of *N. stigma* is Cuba. In *N. stigma* the ocellar triangle and frontal stripes are steel blue and there is a tendency for the two vittæ each side of the median line to fuse: the mesopleuræ are pruinose and black dotted. In the new species there are fewer wing spots.

68. *Euxesta notata* Wiedemann

Specimens were taken on Monserate Island, May 25 and on San José Island, May 29.

69. *Anacampta latiuscula* Loew

Angeles Bay, June 26.

70. *Diacrita costalis* Gerstaecker

Monserate Island, May 25.

71. *Chrysomya demandata* Fabricius

A series of seventeen specimens taken at Guaymas, on April 6, 10, and 15.

72. *Acrosticta tepocæ* Cole, new species

Male: Length 5mm. Head black, the frons and face gray pollinose, the upper occiput gray pollinose, the cheeks and lower occiput shining. Frons nearly smooth, with few short black pile and bristles, parallel sided. Antennæ black, the third joint rather large and oval (see fig. 13), nearly the basal third of arista swollen. Clypeus distinct, black, not projecting forward. Palpi and proboscis shining black.

Thorax and scutellum bluish green, metallic, but dulled by grayish white pollen, denser on mesonotum. Scutellum rounded, convex, with four black bristles. Squamæ snow white. Halteres whitish.

First three segments of abdomen scarlet, the base of first tergite with a tinge of metallic green, the rest of abdomen dark metallic, semishining green; fourth segment as long as second and third combined; green portion of abdomen minutely granular. Femora blackish green, the rest of legs black. Wings hyaline, with costal cell and stigma brown; a large brown spot at apex of wing, much as in other species of genus (see fig. 14); vein R_{2+3} bowed upward, R_{4+5} bowed slightly downward.

Female: Very nearly like the male. Third antennal joint shorter and broader. Fourth abdominal segment about as long as third, thus much shorter than in male. Ovipositor quite wide at base and largely greenish black.

Type: Male, No. 1351, and *allotype*, female, No. 1352, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 25, 1921, at **Tepoca Bay, Sonora**. *Paratypes:* Five males and one female, taken with the types.

This species and the following are closely related to *bicolor* Cresson and differ slightly from the typical species of the genus. This species differs from *dichroa* Loew in having white halteres instead of brown and in having a smooth, pollinose frons; the wing markings are about the same. The legs are not partly red as in *bicolor* and the frons and abdomen differ. The wing and head differ from *foveolata* Loew. In *A. fulvipes* and *rufiventris* the head is red. The wing is not like that of *ruficauda* Hendel and both wing and head differ from *scrobiculata* Loew.

73. *Acrosticta mexicana* Cole, new species

Male: Length 5mm. This species is near the preceding but has the antennæ wholly yellow, the third joint shorter and broader (see fig. 15); and the whole head yellowish, shading to brown on the cheeks. Palpi yellow with short black pile. Frons pale yellow in front, grayish yellow on upper part. Ocellar tubercle and a small mark on each side next the eye, black. Upper occiput black, thinly gray pollinose, the lower part yellow.

Thorax black, with blue-green and purple reflections showing through the thin gray pollen. Scutellum blue-green, the apex rather pointed.

Basal three segments of abdomen short, yellowish red, the three segments together about as long as the fourth; segments beyond third dark green, semishining. Pile of abdomen short and black.

Legs reddish in color, the hind pair darker. Wings yellowish gray hyaline, the apical spot small. Costal cell and stigma brown, as are the veins inclosing them, the rest of the veins yellow, except at wing tip and outer side of cell 1st M_2 .

Female: Same as male. Red of abdomen extended to most of fourth segment; ovipositor wide at base and black.

Type: Male, No. 1353, and *allotype*, female, No. 1354, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 25, 1921, at **Tepoca Bay, Sonora**. *Paratypes:* Three males and seven females, taken with the type specimens.

The species differs from the preceding new species, from *dichroa*, and from *bicolor*, in having a yellowish head and yellowish and brown legs. The apical wing spot is larger than in *foveolata* and there are other differences. *A. rufiventris* Hendel has the frons broader behind and the abdomen wholly blood red; *fulvipes* has no red color on the abdomen.

74. *Ulidia rubida* Loew

San Marcos Island, June 19; San José Island, May 29; Pond Island Bay, June 30.

MICROPEZIDÆ

75. *Nerius flavifrons* Bigot

There are specimens from Isla Partida, April 22, and from Porto Ballandra, Carmen Island, May 21, bred from cactus by J. C. Chamberlin. One teneral specimen was determined by C. W. Johnson. There is some doubt as to the placing of the species as the original description is rather incomplete and does

not mention the numerous black dots on the pleura, coxæ, mesonotum, and segments two to six of abdomen.

76. *Micropeza flaviventris* Cole, new species

Female: Length, excluding ovipositor (2.5 mm.) 7 mm. Frons shining brown, a little paler on sides, ocellar tubercle blackish. Face, cheeks, and mouth parts yellowish. Antennæ yellowish, darker above, with a pale arista. Occiput greatly developed (see fig. 16); the upper and lower occiput brown, a median stripe on sides yellow.

Pronotum yellowish brown, the humeral angles pale. Mesonotum brown in ground color, densely gray pollinose, with two narrow brown vittæ on each side of median line, more or less obscured back of transverse suture; a lateral brown mark, interrupted at suture. Scutellum gray pollinose, with a pair of erect black bristles. Pleura brown, yellowish around wing base, silvery gray pollinose. Halteres largely white, the stem and tip of knob brown.

Dorsum of abdomen black, second to sixth tergite with yellow posterior margins; the venter yellow. Ovipositor about as long as abdomen, the two segments about equal, first segment yellowish brown shining, the second largely brown, blackish at base. Femora honey-yellow, the apices with a faint brown ring; tibiæ yellowish, brown at base and apex; tarsi wholly black; hind tibiæ almost a third longer than middle tibiæ. Wings yellowish hyaline; R_{4+5} and M_{1+2} meeting just before wing margin (apical cell closed in margin); cell 1st A cut off square at apex.

Type: Female, No. 1355, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 15, 1921, at Mulegé, Lower California. *Paratypes:* Two females, taken with the types.

The species would run to *nigricornis* in Cresson's table of species (Trans. Amer. Ent. Soc., XXXIV, p. 2, 1908) and to *bilineata* v.d.W. in the table given in the Biologia. The first species is smaller and has black antennæ, the second is very near the new form but has two white spots near the ocelli, basal antennal joint black, and femora with apex and two rings black.

EPHYDRIDÆ

77. *Ephydra millbræ* Jones

Angeles Bay, May 6.

78. *Ephydra viridis* Hine

San Carlos Bay, July 8.

79. *Ephydra gracilis* Packard

San Carlos Bay, July 8; San José Island, June 10. A series of 38 specimens taken.

80. *Lipochæta slossonæ* Coquillett

Loreto, May 19; Isla Partida, April 22. A series of 40 specimens taken on kelp by the tide line.

81. *Paralimna decipiens* Loew

Mulegé, May 14 (on beach); Loreto, May 19. Several specimens.

82. *Gymnopa tibialis* Cresson

Mulegé, May 14 (on beach); Pond Island Bay, June 30, July 1; Las Animas Bay, May 8; Guaymas, April 11; Angeles Bay, May 5. A series of 30 specimens collected.

OSCINIDÆ

83. *Meromyza americana* Fitch

Mulegé, May 15.

AGROMYZIDÆ

84. *Agromyza æneiventris* Fallén

Guaymas, April 11.

85. *Agromyza* sp.

One teneral specimen taken on San Esteban Island, Gulf of California, April 19, is near *simplex* Loew.

86. *Tethina spinulosa* Cole, new species

Male: Length 3mm. Vertex and most of occiput black, gray pollinose. Frons yellowish. Two pairs of proclinate ocellar bristles, the postverticals wider apart and directed forward and out like the ocellars; three

long fronto-orbitals directed outward and six smaller bristles almost erect. Three pairs of proclinate frontal bristles. First two antennal joints yellow, a good sized bristle above on first; third joint yellowish brown, longer than rest of antennæ and broadly rounded; arista about length of antenna, blackish brown, microscopically pubescent. Face and cheeks yellow, thinly dusted with silvery white pollen. Bristles on oral margin strong, the vibrissæ not differentiated. Face gently concave, the oral margin projecting. Palpi whitish yellow with a few black bristles. Proboscis largely yellow.

Mesonotum, scutellum, pleura and coxæ black in ground color, densely gray pollinose; two faint gray vittæ on mesonotum, narrowly separated. Mesonotum with many black bristles which are almost as strong as the dorso-centrals. Two pair of strong scutellar bristles. One propleural bristle; several mesopleural bristles, four large ones along the posterior margin; several sternopleural bristles, one on upper posterior corner large; rest of pleura bare. Stem of halteres yellow, the knob white.

Abdomen blackish gray in ground color, gray pollinose, the segments with posterior margins yellowish; dorsum covered with quite large black bristles. Hypopygium rather small, black, gray pollinose, curving under and inclosing genitalia. Femora blackish gray, gray pollinose; last two tarsal joints brown, the rest of legs yellowish brown. Legs densely covered with black bristles, except the hind metatarsi which are paler in color and with short, dense, silvery white pile below. Wings whitish hyaline, with yellow veins; costal setulæ black; posterior cross-vein curving inward.

Female: Nearly the same as male. Bristles of most of dorsum noticeably smaller. Apical segments of abdomen very small, the cerci rather long, slender, yellowish.

Type: Male, No. 1356, and *allotype*, female, No. 1357, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 8, 1921, at **Las Animas Bay, Lower California**. *Paratypes:* Numerous specimens from the type locality and from Loreto, May 19, 20; Sal Si Pudes Island, May 9; San Francisquito Bay, May 10.

In *T. parvula* the posterior cross-vein is shorter and straight, the bristles of mesonotum, pleura, and legs much smaller; the cheeks and face much whiter and there are four pair of smaller frontals. *T. albula* is a smaller species and is largely dense white pollinose, with whitish bristles, the cheeks much broader.

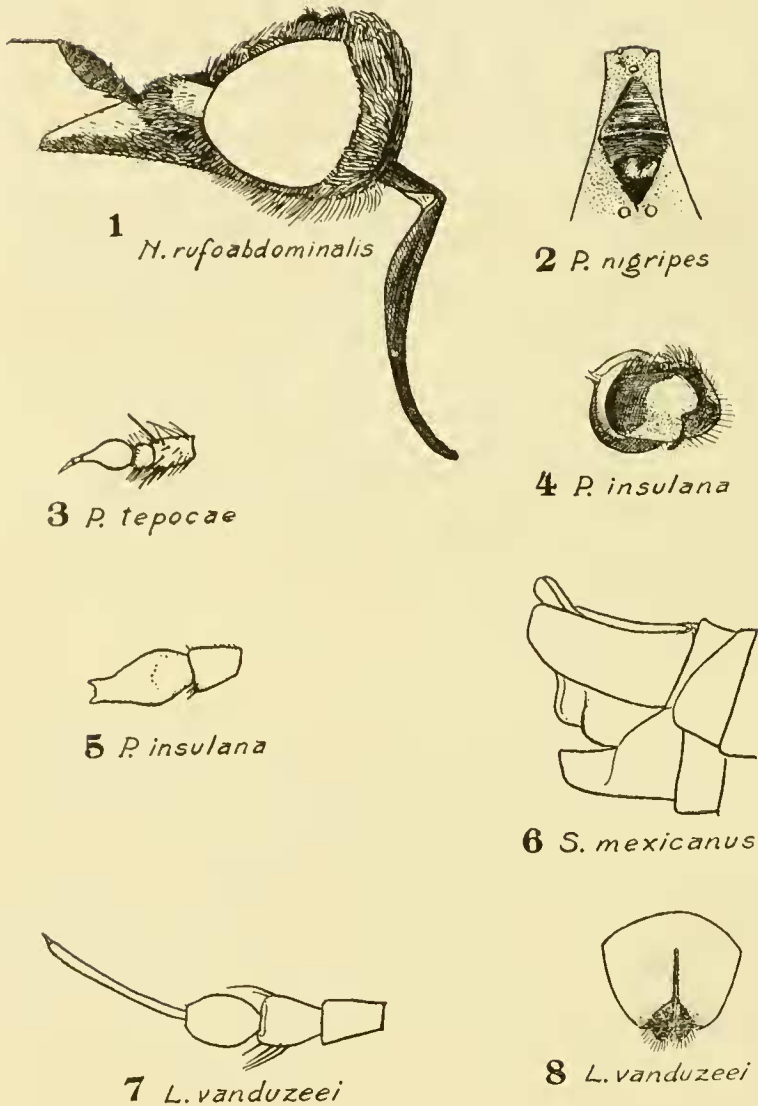
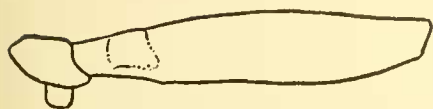
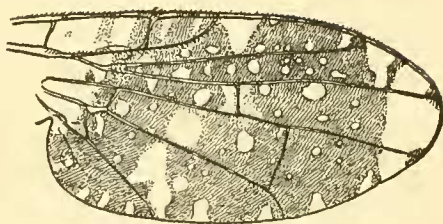


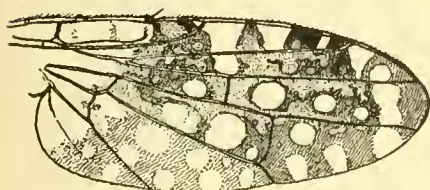
Fig. 1. *Nemotelus rufoabdominalis* Cole, head; fig. 2, *Pherocera nigripes* Cole, frons; fig. 3, *Psilocephala tepocae* Cole, antenna; fig. 4, *Pseudatrichia insulana* Cole, hypopygium; fig. 5, same, antenna; fig. 6, *Stenopogon mexicanus* Cole, genital segment, lateral view; fig. 7, *Lissoteles vanduzeei* Cole, antenna; fig. 8, same, epandrium.



9 *P. sonorensis*



10 *Eurosta pallida*



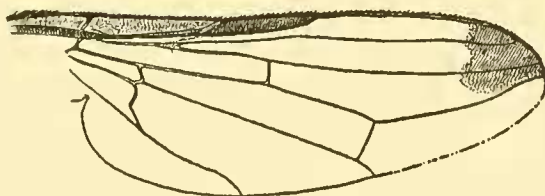
11 *B. maculipennis*



12 *N. purpurata*



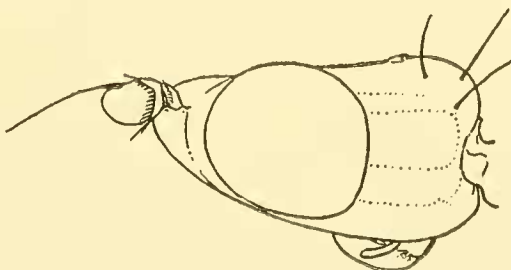
13 *A. tepocae*



14 *A. tepocae*



15 *A. mexicana*



16 *M. flaviventris*

Fig. 9. *Pipunculus sonorensis* Cole, hind trochanter and femur; fig. 10, *Eurosta pallida* Cole, wing; fig. 11, *Baryplegma maculipennis* Cole, wing; fig. 12, *Notogramma purpurata* Cole, wing; fig. 13, *Acrosticta tepocae* Cole, antenna; fig. 14, same, wing; fig. 15, *Acrosticta mexicana* Cole, antenna; fig. 16, *Micropeza flaviventris* Cole, head, lateral view.